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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,071	03/22/2001	Yuichiro Sugimoto	826.1709	2514

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EXAMINER

PEREZ DAPLE, AARON C

ART UNIT	PAPER NUMBER
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2121

8

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/814,071

Applicant(s)

SUGIMOTO ET AL.

Examiner

Aaron C Perez-Daple

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "in correspondence with" in claims 1-12 is a relative term which renders the claims indefinite. The term "in correspondence with" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of applying prior art, the Office interprets "in correspondence with" to mean "using".
3. Claim 2 recites the limitation "which uses a changed base time in correspondence with the base time after being changed." This phrase renders the claim indefinite, as the "changed base time" and the "base time after being changed" should be the same. As disclosed, the base time can not change in correspondence with itself (e.g. *using* itself).
4. Claim 3 recites the limitation "the schedule" in line 6. It is unclear to which schedule this limitation refers. The Office suggests changing "of a schedule in correspondence with an end time of a different schedule having a dependency on the schedule and an offset from the end time" to read "of a first schedule in correspondence with an end time of a second schedule and an offset from the end time, the second schedule having a dependency on the first schedule." Subsequent recitations of "a schedule" or "the

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schedule” in claims 3 and 4 should also be modified to reference either the “first” or “second” schedule. For the purposes of applying prior art, the Office interprets the suggested changes as representing the applicant’s intended meaning.

5. Claims 7, 10 and 12 recite the same limitation as claim 3, above, and therefore suffer from the same deficiencies as claim 3 (cited above). Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Tindell (Tindell, K., “Adding Time-Offsets to Schedulability Analysis”, Technical Report YCS 221, Dept. of Computer Science, University of York, England, January 1994.) (hereinafter Tindell).

Tindell discloses a scheduler operating in a single processor environment [Section 2, “Finally, we mention...single processor systems only....”]. The Office notes that a processor inherently includes a storage unit for storing data and algorithms. Furthermore, a control unit is inherent to the processor. In addition, a processor inherently includes a setting unit, for setting or changing values stored in the storage unit.

8. As for claim 1, Tindell discloses:

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a schedule execution managing apparatus managing execution of one or more schedules, comprising:

a planned start time setting unit [setting unit, inherent to processor] setting a planned start time of a schedule in correspondence with a base time and an offset from the base time [Section 2, "The computational model assumed...period of the transaction."];

a planned start time storing unit storing the set planned start time [storage unit, inherent to processor]; and

a schedule execution controlling unit controlling an execution start of the schedule by referencing contents stored in said planned start time storing unit [control unit, inherent to processor].

9. Claims 5, 9 and 11 are subject to the same limitations as claim 1. Therefore, the same rejections apply (see 102 rejection of claim 1 above).

10. Claims 3, 7, 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Palencia et al (Palencia, J.C.; Gonzalez Harbour M., "Schedulability analysis for tasks with static and dynamic offsets," Real-Time Systems Symposium, 1998. Proceedings., The 19th IEEE , 2-4 Dec. 1998 , pgs. 26 -37.) (hereinafter Palencia).

Palencia discloses a scheduler operating in either a single processor environment or in a multiprocessor and distributed environment [Section 4, "In a multiprocessor and distributed system...worst-case analysis."]. The Office notes that a processor [fig. 3] inherently includes a storage unit for storing data and algorithms. Furthermore, a control unit is inherent to the processor. In addition, a processor inherently includes a setting unit, for setting or changing values stored in the storage unit.

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11. As for claim 3, Palencia discloses:

a schedule execution managing apparatus managing execution of one or more schedules, comprising:

a planned start time setting unit [setting unit, inherent to processor] setting a planned start time of a schedule in correspondence with an end time of a different schedule having a dependency on the schedule and an offset from the end time [Section 1, "Tindell developed in...than the task periods."; Section 2, "The real-time system...that we will call a job."];

a planned start time storing unit storing the set planned start time [storage unit, inherent to processor]; and

a schedule execution controlling unit controlling an execution start of the schedule by referencing contents stored in said planned start time storing unit [control unit, inherent to processor].

12. Claims 7, 10 and 12 are subject to the same limitations as claim 3. Therefore, the same rejections apply (see 102 rejection of claim 3 above).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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14. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being obvious over Tindell in view of George et al (US 5,768,572) (hereinafter George).

As per claim 2, Tindell does not specifically disclose changing a planned start time of a schedule using a changed base time and rewriting the planned start time in the planned start time storing unit. However, George discloses a schedule execution managing apparatus similar to that of claim 1, further comprising:

a planned start time changing unit [inherent to processor] changing a planned start time of a schedule which uses a changed base time in correspondence with the base time after being changed and the offset, when the base time is changed, and rewriting the planned start time stored in said planned start time storing unit [col. 8, "The flow diagram...the timing wheel slot expired."].

It would have been obvious to one of ordinary skill in the art to modify the teachings of Tindell to include changing a planned start time of a schedule using a changed base time and an offset from the base time in order to reset a timer before it expires, as taught by George [cols. 1-2, "The introduction of the HPR...the next periodic acknowledgement."].

15. As per claim 6, Tindell does not specifically disclose resetting a planned start time of a schedule using a changed base time nor storing the reset planned start time. However, George discloses a schedule execution manager method similar to that of claim 5, further comprising:

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resetting a planned start time of a schedule which uses a changed base time in correspondence with the changed base time and the offset from the base time, when the base time is changed [col. 8, "The flow diagram...the timing wheel slot expired."];

storing the reset planned start time [col. 8, "The flow diagram...the timing wheel slot expired."]; and

controlling an execution start of the schedule by referencing the stored planned start time [col. 8, "The flow diagram...the timing wheel slot expired."].

It would have been obvious to one of ordinary skill in the art to modify the teaching of Tindell by resetting a planned start time of a schedule using a changed base time in order to reset a timer before it expires, as taught by George [cols. 1-2, "The introduction of the HPR...the next periodic acknowledgement."].

16. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being obvious over Palencia in view of George.

As per claim 4, Palencia does not specifically disclose changing a planned start time of a schedule based on a changed end time of a different schedule. However, George discloses a schedule execution managing apparatus similar to that of claim 3, further comprising:

a planned start time changing unit [inherent to processor] changing the planned start time of the schedule having the dependency on the different schedule in correspondence with the end time after being changed and the offset from the end time, when the end time of the different schedule is changed, and rewriting the planned start time stored in

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said planned start time storing unit [col. 8, "The flow diagram...the timing wheel slot expired."].

It would have been obvious to one of ordinary skill in the art to modify the teaching of Palencia by changing the planned start time of a first schedule based on a changed end time of a second schedule in order to reset a timer for a task, such as retransmission of data, as taught by George [cols. 1-2, "The introduction of the HPR...the next periodic acknowledgement."].

17. As per claim 8, Palencia does not specifically disclose resetting a planned start time of a schedule using a changed base time nor storing the reset planned start time. However, George discloses a schedule execution manager method similar to that of claim 7, further comprising:

resetting the planned start time of the schedule having the dependency on the different schedule the end time of which is changed, in correspondence with the end time after being changed and the offset from the end time, when the end time of the different schedule is changed [col. 8, "The flow diagram...the timing wheel slot expired."];

storing the reset planned start time [col. 8, "The flow diagram...the timing wheel slot expired."]; and

controlling an execution start of the schedule by referencing the stored planned start time [col. 8, "The flow diagram...the timing wheel slot expired."].

It would have been obvious to one of ordinary skill in the art to modify the teaching of Palencia by resetting a planned start time of a first schedule using a changed end time of a second schedule in order to reset a timer for a task, such as retransmission of data, as

taught by George [cols. 1-2, "The introduction of the HPR...the next periodic acknowledgement."].

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,838,957, note further discussion of method disclosed by George; US 6,480,878, note possible 102(e) reference; US 6,154,735, note discussion of railway scheduling; US 5,010,482, note scheduling of multiple events; US 6,131,093, note start time change and designation portions, fig. 1; US 5,954,792, note cols. 1-3; US 4,819,191, note use of floating triggers; Palencia, J.C.; Harbour, M.G., "Exploiting precedence relations in the schedulability analysis of distributed real-time systems," Real-Time Systems Symposium, 1999. Proceedings. The 20th IEEE, 1-3 Dec. 1999, pgs. 328-339, note scheduling of tasks with offsets; Tindell, K., "Holistic Schedulability Analysis for Distributed Hard Real-Time Systems," Microprocessing & Microprogramming, Vol. 50, Nos. 2-3, April 1994, pgs. 117-134, note sections 1 and 2.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

 7/15/03

Aaron Perez-Daple
July 15, 2003


ANIL KHATRI
PRIMARY EXAMINER